



Australian Government

AURETR3022 Diagnose and repair vehicle dynamic control systems

Release 1

AURETR3022 Diagnose and repair vehicle dynamic control systems

Modification History

Release	Comment
Release 1	<p>Replaces:</p> <ul style="list-style-type: none"> • AURE321671A Service and repair electronically operated stability control systems • AURE321571A Service and repair electronically operated traction control systems • AURE321471A Service and repair electronically controlled anti-lock braking systems <p>Performance Criteria and Range Statement updated to reflect technologies</p>

Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to diagnose and repair vehicle dynamic control systems in light and heavy vehicles. It involves diagnosing deviations from correct operation, repairing dynamic control system components and associated systems, and undertaking post-repair testing procedures.</p> <p>The unit also involves identifying and confirming work requirements, preparing for work, and completing work finalisation processes, including clean-up and documentation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
-----------------	---

Application of the Unit

Application of the unit	<p>Work applies to vehicle dynamic control systems fitted to light and heavy vehicles.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
--------------------------------	---

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability skills	This unit contains employability skills.
-----------------------------	--

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
---	--

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose vehicle dynamic control systems	1.1. <i>Workplace instructions</i> are used to determine <i>job requirements</i> 1.2. <i>Workplace health and safety (WHS) requirements</i> are observed throughout the work 1.3. <i>Procedures and information</i> are sourced and interpreted 1.4. <i>Options for diagnosing faults</i> are identified and used, using appropriate tools and diagnostic techniques 1.5. <i>Tools and equipment</i> are identified for effective repair methods
2. Diagnose vehicle dynamic control systems	2.1. <i>Vehicle dynamic control systems</i> are tested to isolate faults according to workplace procedures and without causing damage to components or systems as a result of <i>inappropriate testing procedures</i> 2.2. <i>Faults</i> are identified from test results and causes of faults are determined 2.3. Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair vehicle dynamic control systems	3.1. <i>Repair options</i> are analysed and those most appropriate to the circumstances are selected 3.2. Appropriate tools, techniques and materials are selected and prepared 3.3. Repairs and component replacements and adjustments are carried out without causing damage, according to workplace procedures and manufacturer and component supplier specifications 3.4. <i>Post-repair testing</i> is carried out according to workplace procedures and relevant legislation
4. Prepare vehicle for delivery to customer	4.1. Final inspection is made to ensure work is to workplace expectations 4.2. Vehicle is cleaned to workplace expectations and presented ready for use 4.3. Workplace documentation is processed according to workplace procedures
5. Clean up work area and finalise work processes	5.1. Material that can be reused is collected and stored according to workplace sustainability practices 5.2. Waste and scrap are removed according to workplace practices 5.3. Tools, equipment and work area are cleaned and inspected

	<p>according to workplace procedures</p> <p>5.4.Tools and equipment are maintained according to workplace procedures</p> <p>5.5.Faulty equipment is identified, tagged and isolated according to workplace procedures</p>
--	---

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
 - follow verbal and written instructions
 - clarify workplace instructions and determine job requirements
 - gain information from appropriate persons and assistance as required
- initiative and enterprise skills to:
 - apply learning when diagnosing and repairing various vehicle dynamic control systems
 - recognise a workplace problem or potential problem and take action
- learning skills to identify sources of information, assistance and expert knowledge to expand own skills, knowledge and understanding
- literacy skills to:
 - read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
 - obtain and record measurements
 - document required repairs and parts
- numeracy skills to:
 - test, measure and analyse test equipment results compared to desired system performance
- planning and organising skills to:
 - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
 - identify risk factors and take action to minimise them
- problem-solving skills to:
 - determine the underlying causes of faults
 - refer problems outside area of responsibility to appropriate person and suggest possible causes or solutions
 - seek information and assistance as required to solve problems
- self-management skills to:
 - select and use appropriate equipment, materials, processes and procedures
 - follow workplace documentation, such as codes of practice and operating procedures
- technical skills to use hand, power and specialised tools relating to the repair of vehicle dynamic control systems
- technology skills to:
 - operate diagnostic and automotive test equipment
 - use technology to collect, analyse and provide information

Required knowledge

REQUIRED SKILLS AND KNOWLEDGE

- WHS regulations, requirements, equipment, material and personal safety requirements, including:
 - individual state and territory legislation
 - codes of practice
 - personal protection needs when working on vehicles in an automotive workshop
- application, purpose and operation of vehicle dynamic control systems
- principal types of vehicle dynamic control systems, including:
 - electronic braking control module (EBCM):
 - active roll-over protection
 - anti-lock braking
 - brake assist
 - descent control
 - electronic brake force distribution
 - electronic park brake
 - hill start assist
 - stability control
 - traction control
- techniques for reading and interpreting automotive technical information, graphic symbols and wiring diagrams
- diagnostic and testing procedures, including:
 - diagnostic procedures for vehicle dynamic control systems, including accessing and interpreting:
 - diagnostic trouble codes
 - diagnostic flow charts
 - analysis of system operation using electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment
 - visual, aural and functional assessments, including:
 - component damage and wear
 - component corrosion
- repair procedures, including:
 - component removal and replacement procedures
 - component and associated system adjustment procedures

Evidence Guide

EVIDENCE GUIDE	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.</p>	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.</p> <p>A person who demonstrates competency in this unit must be able to:</p> <ul style="list-style-type: none"> • select methods and techniques appropriate to the fault being diagnosed • complete preparatory activity in a systematic manner • diagnose and repair at least three different faults within vehicle dynamic control systems • conduct diagnosis and repair procedures according to workplace, manufacturer and component supplier requirements • present vehicle in a condition that complies with workplace requirements.
Context of, and specific resources for assessment	<p>Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.</p> <p>Assessment is to occur:</p> <ul style="list-style-type: none"> • using standard workplace practices and procedures • following safety requirements • applying environmental constraints. <p>Assessment is to comply with relevant:</p> <ul style="list-style-type: none"> • regulatory requirements • Australian standards • industry codes of practice. <p>The following resources must be made available for the assessment of this unit:</p> <ul style="list-style-type: none"> • workplace location or simulated workplace • vehicles with various vehicle dynamic control system faults • equipment appropriate for the testing of vehicle dynamic control systems • specifications and workplace instructions

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- tools appropriate for repairing, replacing and adjusting vehicle dynamic control systems.

Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<i>Workplace instructions</i> may include:	<ul style="list-style-type: none"> • electronic or hard copy instructions • verbal instructions • written instructions.
<i>Job requirements</i> may include:	<ul style="list-style-type: none"> • diagnosis and repair methods, processes and equipment.
<i>Workplace health and safety requirements</i> may include:	<ul style="list-style-type: none"> • workplace first aid equipment • workplace safety policies and procedures • safe work procedures relating to the repair of vehicle under-body systems • safe handling of material • hazard control, including control of hazardous materials and toxic substances • personal protective clothing and equipment • use of fire-fighting equipment • safe use of tools and equipment.
<i>Procedures and information</i> may include:	<ul style="list-style-type: none"> • verbal, written and graphical instructions • signage • work schedules, plans and specifications • work bulletins or memos • material safety data sheets • diagrams and sketches • safe work procedures relating to the repair and replacement of instrument and warning systems • regulatory and legislative requirements relating to automotive industry • Australian Design Rules • engineer's design specifications and instructions • workplace work specifications and requirements • instructions issued by authorised workplace or external persons • Australian standards • vehicle service requirements and repair manuals.
<i>Options for diagnosing faults</i> may include:	<ul style="list-style-type: none"> • obtaining vehicle service history • isolating faults

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

	<ul style="list-style-type: none"> • inspecting and evaluating components.
<i>Tools and equipment</i> may include:	<ul style="list-style-type: none"> • hand tools • vehicle lifting devices • power tools • specialist tools for removing vehicle trim and assemblies • dynamometer • electronic testing equipment, including: <ul style="list-style-type: none"> • multimeter • oscilloscope • scan tools.
<i>Vehicle dynamic control systems</i> may include:	<ul style="list-style-type: none"> • anti-lock braking system (ABS) control • traction control • steering control • stability control • powertrain management control.
<i>Inappropriate testing procedures</i> may include:	<ul style="list-style-type: none"> • intrusive testing (which must not be performed as it is not a recommended test and repair method), which includes: <ul style="list-style-type: none"> • back probing terminals and connectors and fuse holders with inappropriate test probes • probing terminal and connectors with inappropriate test probes • pushing sharp probes and objects into wiring insulation.
<i>Faults</i> may include:	<ul style="list-style-type: none"> • component malfunction, including: <ul style="list-style-type: none"> • sensor malfunction • yaw rate • lateral rate • steering angle • electronic control module (ECM) or unit (ECU) • electronic brake control module (EBCM) • CAN-bus network operational faults • system and component adjustment • open or short circuits to power, ground and reference circuits • high circuit resistance • diagnosis trouble codes (DTC) being set.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<i>Repair options</i> may include:	<ul style="list-style-type: none"> • procedures for removing, replacing and adjusting • procedures for dismantling, repairing, re-assembling and adjusting • fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical short and open circuits • electrical measurements • diagnosing and determining repair requirements, electronic systems data, including fault codes, sensor, actuator measurement, and control unit input and output signals • reading and interpreting wiring diagrams.
<i>Post-repair testing</i> may include:	<ul style="list-style-type: none"> • validating the effectiveness of the repair action • confirming that reported fault has been rectified • confirming that no other faults are present as a result of the repair action.

Unit Sector(s)

Competency field	Electrical
Unit sector	Technical – Electrical and Electronic

Custom Content Section

Not applicable.